

# Advancing Clean Air, Climate, & Health:

## *Opportunities for Nurses*

“Keep the air within as pure as the air without”

~Florence Nightingale, 1859



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## *Opportunities for Nurses*

### INTRODUCTION

There is growing evidence and concerns about the impacts of climate change on health and how to respond to these impacts. Information about health risks associated with a variety of climate changes such as heat waves, droughts, wildfires, droughts, and flooding provides nurses an opportunity to inform and limit adverse health impacts. Nurses are one of the most trusted health professionals and their engagement on this issue can have a significant, positive impact on the health of their patients, communities, and policy decisions. This effort, informed through a focus group comprised of nurse experts in the field, resulted in the development of a series of educational media modules entitled “Advancing clean air, climate, and health: Opportunities for Nurses”.

This workbook complements a series of web-based media modules to create a campaign for advocacy that is designed for public and environmental health nurses who are interested in learning about the science of climate change, public health impacts, and how they can effectively advocate for the Clean Air Act and clean energy policies.

Goals that will be addressed through the web based media module advocacy campaign for clean energy and clean air policies include:

- ◆ Promote the EPA’s authority under the Clean Air Act to set air pollution standards and defend against attacks
- ◆ Continue engagement and development of grassroots activists, community leaders
- ◆ Support development of a strong EPA proposal for reducing carbon pollution from existing power plants

### ACKNOWLEDGEMENTS

The Alliance of Nurses for Healthy Environments would like to thank the US Climate Action Network for their generous support of this project.

**CLIMATE CHANGE HAS BEEN CHARACTERIZED AS “...THE BIGGEST GLOBAL HEALTH THREAT OF THE 21ST CENTURY” (Costello et al., 2009)**

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# Module I:

## Climate Change and Health

### INTRODUCTION

After viewing this media module, the participant will be able to:

1. Define climate change
2. Describe at least one way that climate change can impact community or individual health conditions.

### WHAT IS CLIMATE CHANGE?

Climate change is a significant and lasting change in the distribution of weather patterns over periods of time ranging from decades to millions of years. It may be a change in average weather conditions, or in the distribution of weather around the average conditions (i.e., more extreme weather events).

The greenhouse effect is a process caused by greenhouse gases, which occur naturally in the atmosphere. This process plays a crucial role in warming the Earth's surface, making it habitable. However, greenhouse gas emissions (generated by humans) disrupt the natural balance and lead to increased

warmth. Greenhouse gases in the atmosphere prevent energy from immediately escaping from the Earth's system. The greenhouse gases then distribute this energy, warming the Earth's surface and lower atmosphere (see Figure 1).

Learn more by viewing the slides and interactive graphics from the [Earth Lab: Degrees of Change](#) exhibit at the Marian Koshland Science Museum of the National Academy of Sciences.

Watch [Climate Change Basics](#) by the US EPA.

### CLIMATE CHANGE AND HEALTH

Human activities are causing environmental changes of epidemic proportions. The earth's temperature is increasing, mainly as a result of human activity such as burning fossil fuel and greenhouse gas emissions from energy production, transportation, industry, and agriculture. These changes are occurring globally at a rate that exceeds what the world has experienced over the last 650,000 years (Parry et al., 2007).

Climate change, experienced as extreme weather events such as heat waves, melting of snow, and ice with rising sea levels, changes in precipitation resulting in flooding and drought, more intense hurricanes and storms, wildfires, as well as poorer air quality, highlight the critical need for us to consider the consequences of these environmental changes on health (See Figure 2). Health impacts can result from

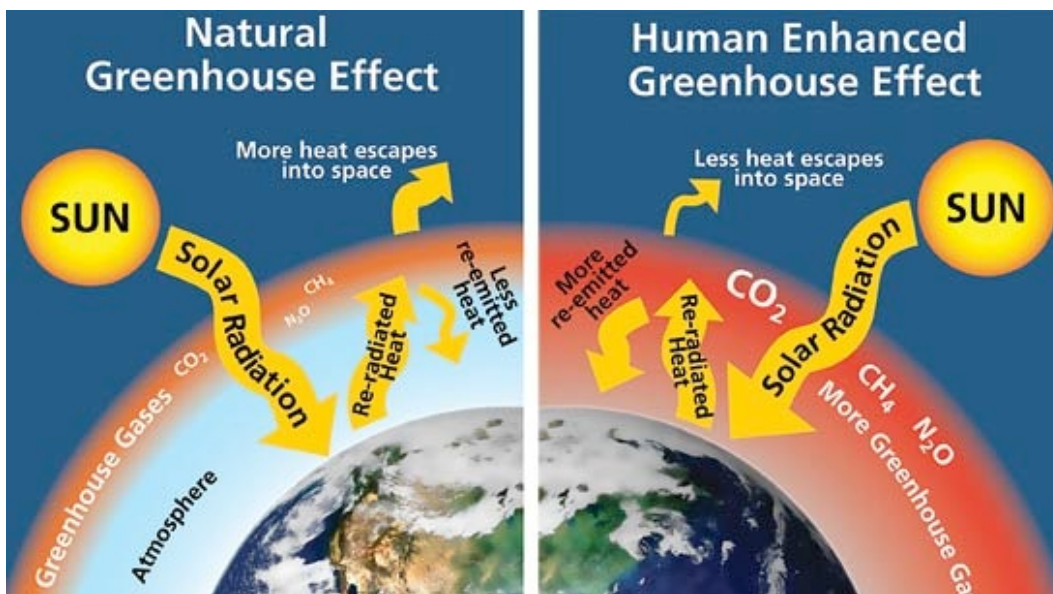


FIGURE 1.

Left: This shows the warming process caused by the natural greenhouse effect. Gases such as carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O)—trap some of the sun's heat and keep the planet from freezing.

Right: Human activities, such as the burning of fossil fuels, are increasing the levels of greenhouse gas, which leads to an enhanced greenhouse effect. This results in global warming and unprecedented rates of climate change.

Elder, NPS



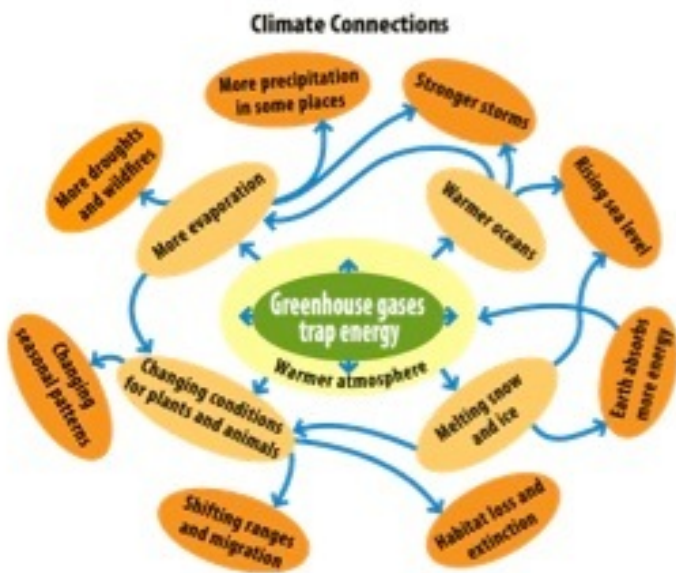


FIGURE 2. EPA

direct exposures to climate change through changing weather patterns (e.g., heat waves), or indirectly through changes in water availability, air quality, and resultant changes in agriculture and the economy.

Regional climate changes are on the rise. In some locations, extreme precipitation events are becoming increasingly common, such as in the Northeast, while in other areas droughts are more frequently experienced, such as in the Southwest (Portier & Tart, 2010). The map from the Natural

Resources Defense Council (NRDC) (see Figure 3) shows a range of extreme weather events in the US. Health impacts should be considered based on these climate changes, which are regionally determined. These effects will continue to increase as the climate changes.

### HEAT-RELATED ILLNESS

Average global temperatures are rising and are expected to continue to increase. Health consequences of this global temperature rise include increasing rates of heat stress and exhaustion, heat cramps, heat stroke, and death. In the US, extreme heat events already cause more deaths annually than all other extreme weather events combined (Portier & Tart, 2010). Much of the excess mortality from heat waves is concentrated in infants, children, and those over 65 (Haines & Patz, 2004; Portier & Tart, 2010). Those living in urban environments are at added risk because of heat trapping materials used in the construction of roads and buildings.

Additionally, cities lack significant tree cover, exacerbating the high temperatures. Cities frequently experience ambient air temperatures from 1.8–5.4°F (1–3°C) warmer than the surrounding rural and suburban areas. This “urban heat island” also absorbs heat during the daytime and radiates it outward at night, raising nighttime minimum temperatures by 22°F (12°C) (Environmental Protection Agency (EPA), 2011a).

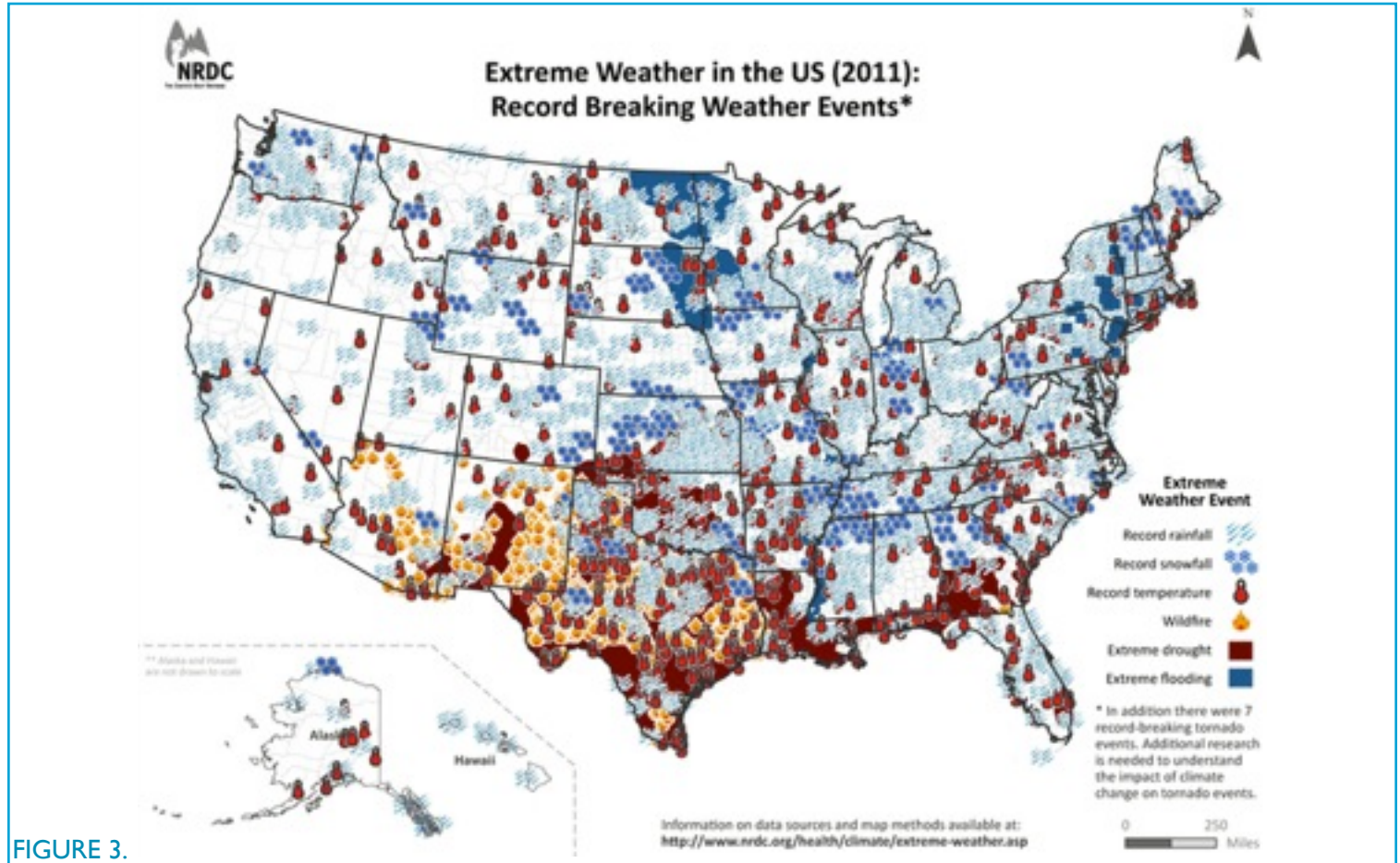


FIGURE 3.

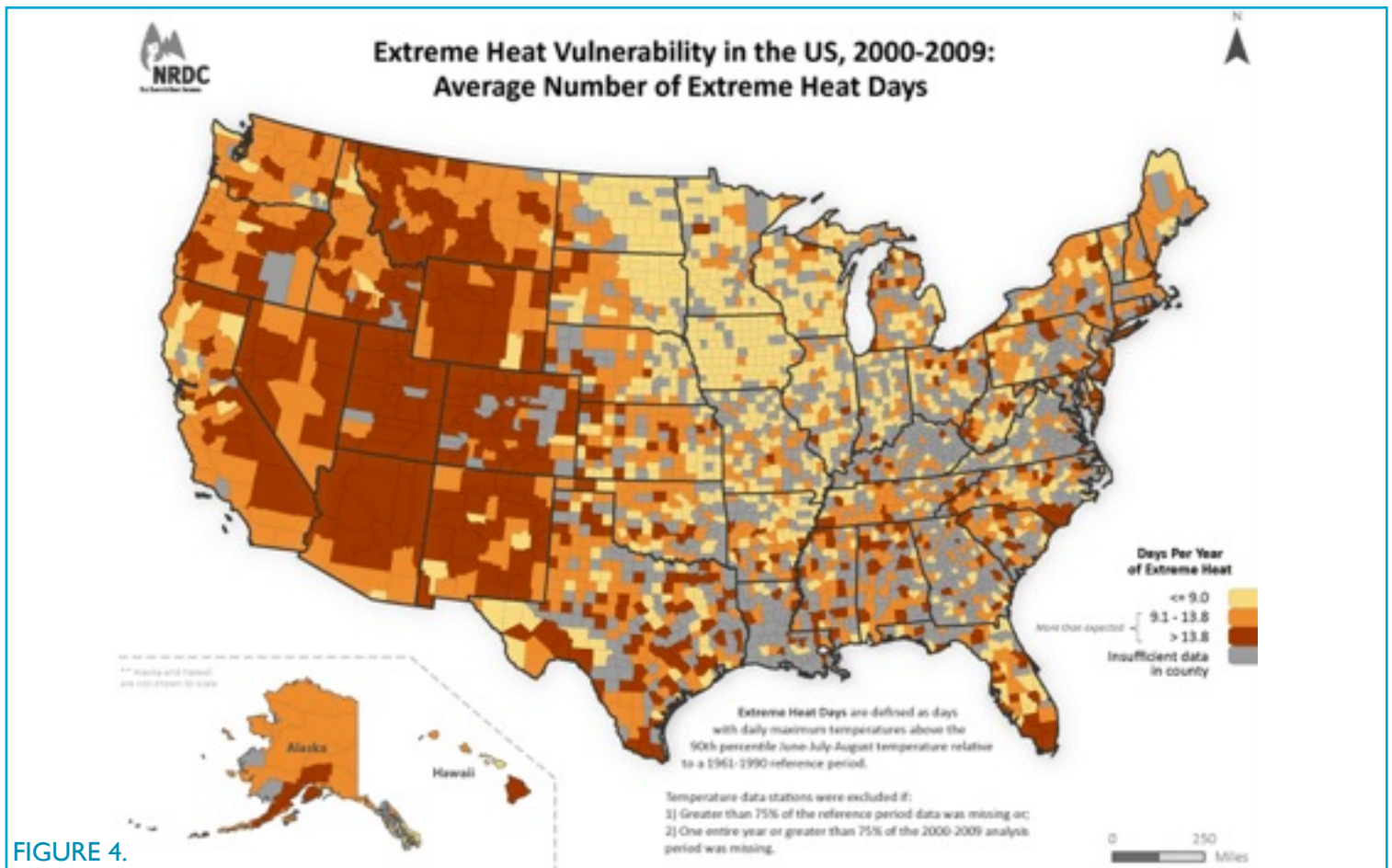


FIGURE 4.

## WATER SECURITY AND DROUGHT

Water security, or the reliable availability of water for drinking, agriculture, manufacturing, and many other uses, is essential to human health. However, floods and droughts that result from climate change can dramatically impact water availability and surface water quality (Delpla et al., 2009). In the United States, Southern states' droughts have become a more frequent occurrence and Western states have experienced water shortages worsened by reduced mountain snow pack attributable to global warming (Portier & Tart, 2010).

Figures 5 & 6 provide information on drought and flood vulnerability in the U.S.

## INSECT-BORNE DISEASES

Many major infectious disease agents (such as bacteria and viruses) and the vectors or organisms that carry them (e.g. mosquitoes) are highly sensitive to temperature and rainfall (Patz, Campbell-Lendrum, Holloway & Foley, 2005). The potential for climate change to impact the range and incidence of vector borne and zoonotic diseases is influenced by the ecology of insects and on the life cycles of the disease causing germs they carry ([www.cdc.gov/ncezid](http://www.cdc.gov/ncezid)). As environmental conditions change, the geographic range of the vectors for illnesses is extended, increasing the potential for infection. For example, as temperature increases, the malaria

parasite reproduces at a higher rate and mosquitoes feed more frequently. Changes in climate may make insect-borne diseases harder to control (Irfan & Climate Wire, 2011).

## RESPIRATORY DISEASES AND PREMATURE DEATH

It is predicted that health impacts from climate change and ozone pollution in 2020 will result in significant increases in acute respiratory symptoms, asthma-related emergency room visits, weather-related hospital admissions for infants and the elderly, lost school days, and premature deaths (Costello et al., 2011). Small changes in temperature (a degree or two) coincide with increasing ground-level ozone and with it, a significant effect on death rates. An estimated 3,700 deaths annually can be attributed to these small increases in ozone levels (Bell et al., 2004; Bell et al., 2008; Perera & Sanford, 2011).

Climate change and resulting air pollution poses a serious threat to respiratory health (Babin et al., 2007; Ebi et al., 2006; Ebi & McGregor, 2008; Parry et al., 2007). There is now strong evidence linking changes in the seasonal pattern of allergenic pollen and excess death from heat waves. Global warming has caused an earlier onset of the spring pollen season in the Northern Hemisphere (Metz et al., 2007) and increased the production of allergens (e.g., ragweed). Temperature increases and increased carbon dioxide (CO<sub>2</sub>) concentrations produce earlier flower blooming affecting the





### Drought Vulnerability in the US, 2000-2009: Average Number of Extreme Low Flow Days, by Watershed

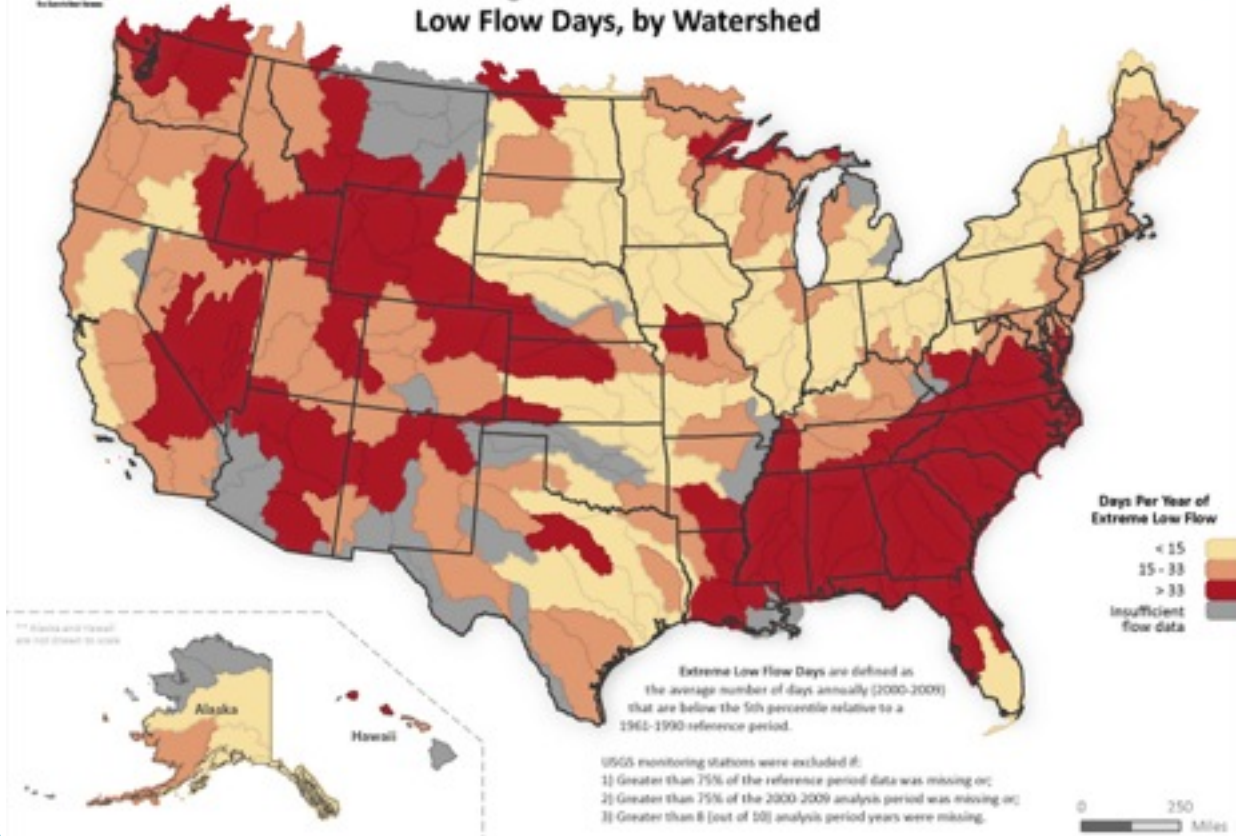


FIGURE 5.



### Flood Vulnerability in the US, 2000-2009: Average Number of Extreme High Flow Days and Recorded Floods, by Watershed

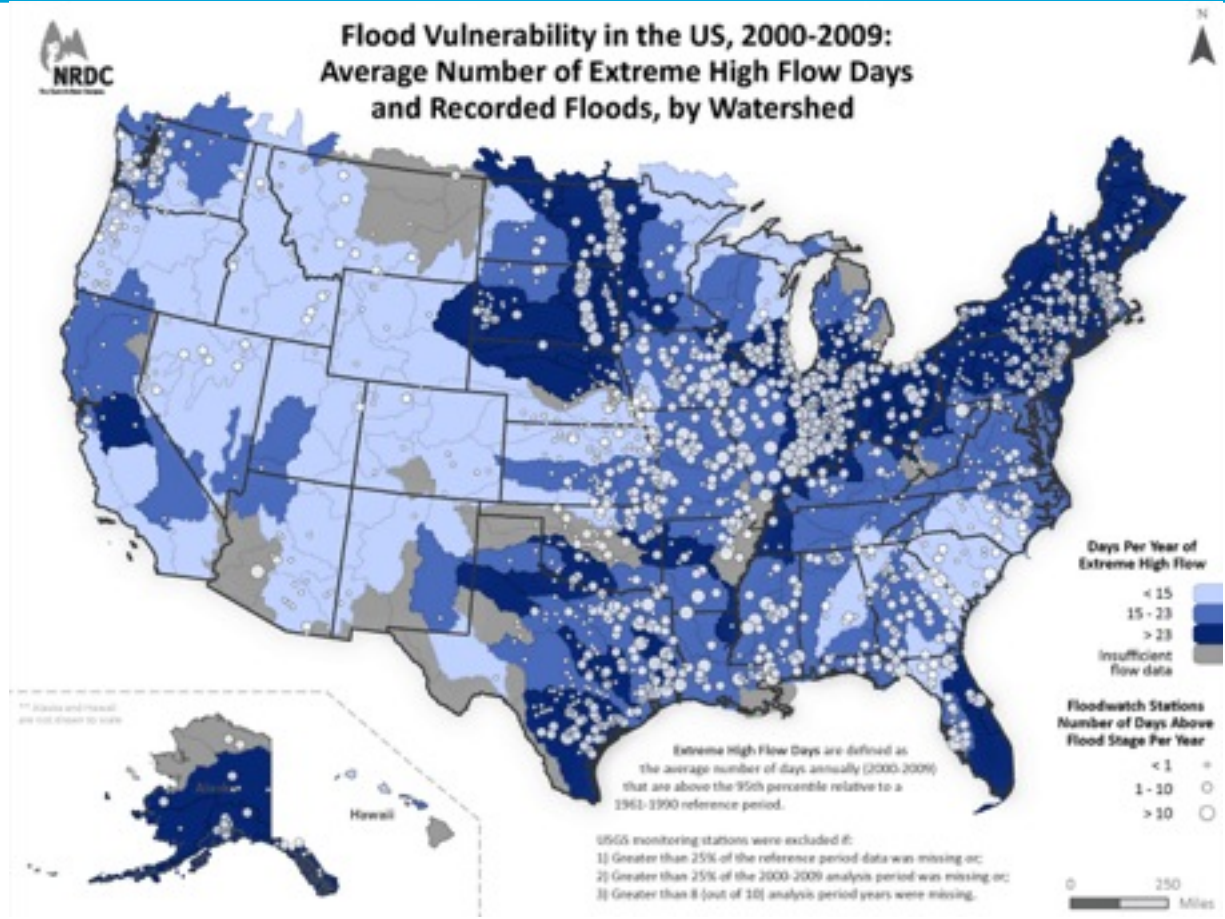


FIGURE 6.

timing and distribution of allergens such as pollen. It is anticipated that respiratory allergies and asthma will become more common and severe because of increased exposure to pollen, molds, and air pollution as a result of climate change (D'Amato et al., 2010; Ebi et al., 2008). Figure 7 shows ozone and ragweed occurrence in the U.S.

## MENTAL HEALTH

Climate change may affect mental health directly by exposing people to trauma (Berry, Bowen & Kjellstrom, 2010). Adverse psychiatric outcomes are well-documented in the aftermath of natural disasters (Page & Howard, 2010), and can include both acute traumatic stress and more chronic stress-related conditions (such as post traumatic stress disorder). Extreme heat events, which will become common as global temperatures rise, may be associated with a general increase in aggressive behavior, higher rates of criminal activity, and increased suicide rates (Berry et al., 2010). There will likely be an increase in the overall burden of mental disorders worldwide as extreme weather conditions and natural disasters can lead to displacement, loss, and social disruption. Those who are already vulnerable to stress-related disorders and mental health disease are at even higher risk following extreme weather conditions.

## FOOD SECURITY

Climate change compromises agricultural production, especially in areas with limited capacity to adapt to these variations (Muller et al., 2011; Burke & Lobell, 2010). Climate change is predicted to worsen malnutrition in the developing world (Parry et al., 2007). Extreme weather events and changes in temperature and precipitation patterns can directly damage or destroy crops and other food supplies. This may happen seasonally, but is anticipated to become a chronic problem under changing climate conditions. (Portier & Tart, 2010). Modeling studies have shown that corn and soybean yields in the USA fell by 17% for every degree rise in growing season temperature (Lobel & Asner, 2003). It is predicted that by the end of the 21st

century one half of the world's population could face severe food shortages due to the impact of rising temperatures on staple food crops. In subtropical and tropical regions, staple food crops could fall by 20-40% (Battisti & Naylor, 2009).

## POPULATIONS AT RISK

Populations considered most vulnerable to the adverse effects of climate change, lack the ability to cope with the consequences of climate change. Children, older adults, and the poor are typically more susceptible to illness and death associated with heat- and extreme weather events, as well as waterborne vector-borne, and food-borne illnesses.

## PRETERM DELIVERY

An 8.6% increase in preterm delivery was associated with a 10°F increase in the weekly average temperature, with greater risks observed for younger mothers, Blacks, and Asians (Basu et al., 2010).

## POSTNATAL PERIOD

Evidence supports a strong causal relationship between air pollution and respiratory deaths in the post-neonatal period (Radim et al., 2005). Increased temperatures were significantly associated with preterm birth for all mothers, regardless of maternal racial/ethnic group, maternal age, maternal

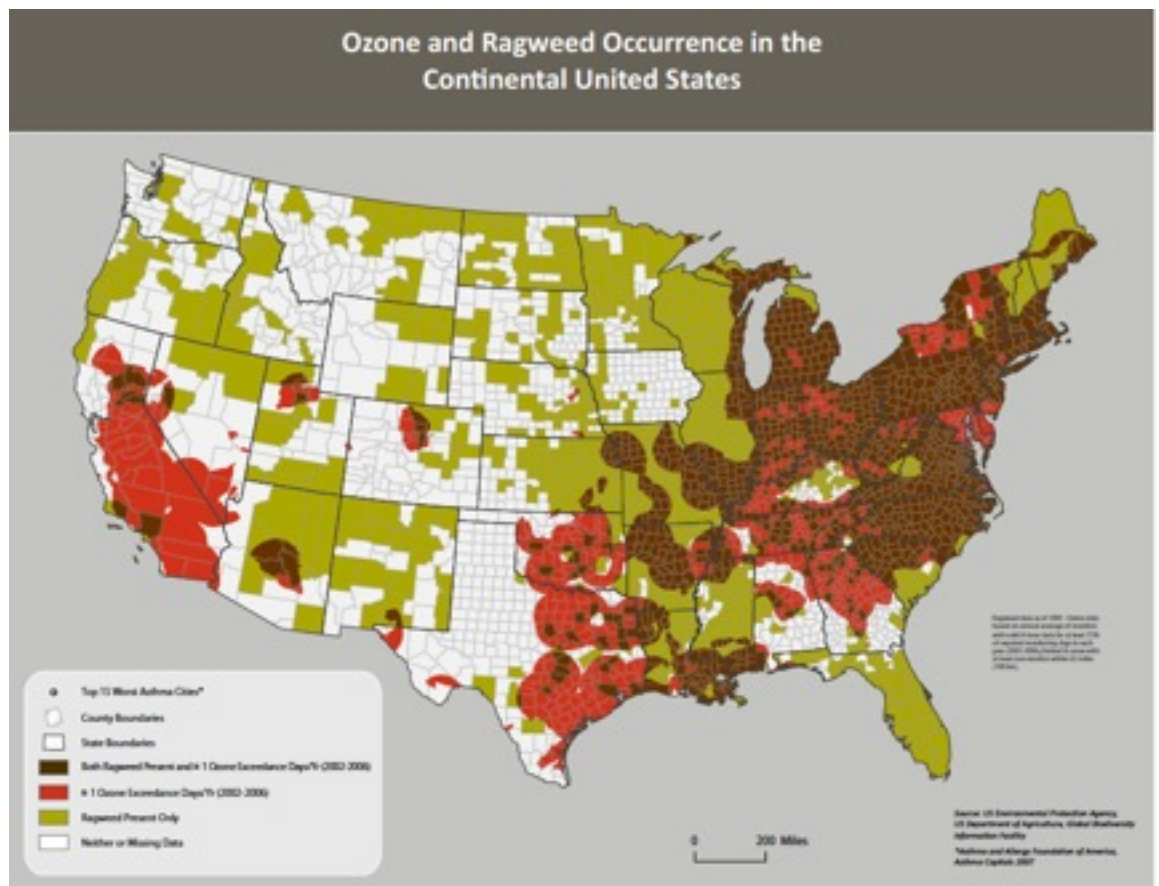


FIGURE 7. From: [http://www.nrdc.org/globalwarming/sneezing/map\\_nonames.pdf](http://www.nrdc.org/globalwarming/sneezing/map_nonames.pdf)

education, or sex of the infant. An 8.6% increase in preterm delivery was associated with a 10°F increase in the weekly average temperature, with greater risks observed for younger mothers, Blacks, and Asians (Basu et al., 2010). As temperatures continue to increase in some regions of the world, consideration of its impact on birth outcomes is critical (Anderko, Chalupka, & Anderko, 2012).

## CHILDREN

Children spend more time than adults outdoors, breathe more rapidly than adults, and are still developing their respiratory structures. There is strong evidence of associations between respiratory disease and a wide range of environmental variables impacted by climate such as heat waves. Additionally, children are less able to deal with heat and are more susceptible to dehydration. They are therefore, more vulnerable to heat-related disease and death and will suffer disproportionately as the Earth warms. (Ebi & Paulson, 2007; Sheffield, & Landrigan, 2011).

## ELDERLY

Advanced age is one of the most significant risk factors for heat-related death in the U.S. since older adults are less able to regulate extremes in temperatures (Physicians for Social Responsibility (PSR), n.d.). In addition, older adults often have pre-existing medical conditions that are made worse by climate related-conditions (Balbus & Malina, 2009). Finally,

older adults are also more likely to live alone, have limited mobility, cognitive constraints, and have reduced social contacts, all factors that further increase their vulnerability (Anderko & Chalupka, 2012; Anderko & Chalupka, 2013).

## POOR

Those living in poverty are also extremely vulnerable to many of the health effects of climate change. Existing illnesses and challenges in daily life are further complicated by disruptions in access to public services, displacement from homes and the need to migrate with limited transportation options, and increased stress as a result of extreme climate events (Anderko & Chalupka, 2012).

WEATHER EVENT	HEALTH EFFECTS	POPULATIONS MOST EFFECTED
Heat waves	Heat stress	Extremes of age, athletes, people with respiratory disease
Extreme weather events(rain, hurricane, tornado, flooding)	Injuries, drowning	Coastal, low-lying land dwellers, low SES
Droughts, floods, increased mean temperature	Vector-, food- and water-borne diseases	Multiple populations at risk
Sea-level rise	Injuries, drowning, water and soil salinization, ecosystem and economic disruption	Coastal, low SES
Drought, ecosystem migration	Food and water shortages, malnutrition	Low SES, elderly, children
Extreme weather events, drought	Mass population movement, international conflict	General population
Increases in ground-level ozone, airborne allergens, and other pollutants	Respiratory disease exacerbations (COPD, asthma, allergic rhinitis, bronchitis)	Elderly, children, those with respiratory disease
Climate change generally; extreme events	Mental health	Young, displaced, agricultural sector, low SES

**Table 1.** Center for Disease Control: Weather Events, Health Effects, and Populations Most Affected. Adapted from: CDC Policy on Climate and Health. [http://www.cdc.gov/climatechange/pubs/Climate\\_Change\\_Policy.pdf](http://www.cdc.gov/climatechange/pubs/Climate_Change_Policy.pdf).



# The Clean Air Act and Climate:

## *Origins of the Clean Air Act -*

### *The Donora, Pennsylvania Smog Disaster*

In October 1948, a thick cloud of air pollution formed above the industrial town of Donora, PA. The cloud lingered for five days, killing 20 people and causing illnesses in 6,000 people in a city of 14,000. This event alerted citizens and policymakers about the dangers of air pollution and its impact on health.

Devra Davis, a resident and later an author of the book *When Smoke Ran Like Water* (2002) describes the day like this: "Doc Rongaus gave the same advice to anyone who would listen. Leave if you can. The firemen of Donora went from door to door delivering whiffs of oxygen from tanks to those who were stranded." A personal interview of a survivor from the Donora PA disaster can be found at: [Smog Deaths In 1948 Led To Clean Air Laws](#).

Twenty-two years after the Donora smog, Congress passed the Clean Air Act by strong bipartisan majorities, and President Richard Nixon signed it into law. The original Clean Air Act of 1963 was passed and established funding for the study of and cleanup of air pollution. However, there was no comprehensive federal response until Congress passed a much stronger Clean Air Act of 1970. That same year Congress created the EPA and gave it the primary role in carrying out the law. In 1990, Congress revised and expanded the Clean Air Act providing EPA broader authority to implement and enforce regulations reducing pollutant emissions. Currently, President Obama has initiated carbon



pollution standards as part of his Climate Action Plan. His speech addressing his Climate Action Plan may be viewed at [President Barack Obama on Climate Change](#). His climate action plan can be found at: [Climate Change and Presidents Barack Obama's Action Plan](#).

Watch the Module I video and learn more about the Donora disaster here: <https://www.youtube.com/watch?v=F6VLLHllfQ>



# Module 2:

## *Stories from the Field: Addressing Climate Change and Public Health*

### INTRODUCTION

After viewing this media module, the participant will be able to:

1. Describe two ways that nurses can help their communities prepare for the health impacts of climate change.

### BACKGROUND

#### NURSES: OPPORTUNITIES FOR ACTION

Climate change will cause enormous health challenges, which will necessitate a significant response from nurses. According to Dr. Margaret Chan, Director General of the World Health Organization (2007), “We have compelling reasons for doing so. Climate change will affect, in profoundly adverse ways, some of the most fundamental determinants of health: food, air, water.”

Nurses have a significant role and professional responsibility to act. The American Nurses Association has taken a stand on climate and the role of nurses through resolutions introduced in 2008. Read [Global Climate Change Resolution](#). Nurses must first become informed about the health implications of climate change in order to educate clients and communities. A good place to start is the resources provided by the Climate and Health Literacy Consortium (see Appendix B- Health Care without Harm (HCWH)). The Consortium is a collaboration of the leading organizations working to educate the public, health care professionals, and facility administrators about the health effects of climate change, and how climate change policy and consumption choices influence the health of our communities. A list of key resources can be found on Health Care Without Harms website at [Climate and Health Literacy Consortium](#).

Nurses can also lead by example by reducing their personal carbon footprint and embracing a sustainable life style (e.g., a reduced dependency on automobile travel) and to consider the environmental costs at work (e.g., purchasing for your

facility). Download a poster that describes how nurses can decrease energy use in healthcare [here](#).

Implementing steps to reduce Green House Gas (GHG) emissions is only part the challenge of addressing climate change. Scientific evidence indicates that even if GHG emissions were to be stabilized at current levels, the earth is already committed to significant warming by the end of the century. Climate change preparedness projects must begin immediately, as we advocate for regulations to reduce GHG emissions (Knowlton, 2008). Nurses can play a vital role in local and regional climate adaptation strategies by preparing their communities to be resilient and best cope with the anticipated health impacts of climate change (Gould, 2011; McMichael et al., 2008). Georgetown Climate Center has an [Adaptation Clearinghouse](#) with information for local communities and a listing of adaptation plans for each state in the U.S.

In July 2013 the White House honored two nurses with the Champions of Change award for their work in Public Health and Climate: Laura Anderko and Therese Smith. Read their stories at [Changing the Lens: Communicating Public Health Issues](#) and [Protecting Human Health in a Changing Climate](#).

Watch the Module 2 video and learn about what’s driving nurses to become involved in climate change advocacy: [https://www.youtube.com/watch?v=L653uF\\_Gjl](https://www.youtube.com/watch?v=L653uF_Gjl)



Laura Anderko was honored at the White House as a Champion of Change in Public Health and Climate.

# Module 3:

## Advocacy

### INTRODUCTION

After viewing this media module, the participant will be able to:

1. Identify one or more environmental improvement that has occurred since the creation of the Clean Air Act.
2. List three steps to presenting an effective advocacy message.
3. List two or more organizations that can provide resources to nurses about clean air and health.

### NATURAL DISASTERS AND CLIMATE CHANGE

Extreme weather conditions result in disasters. It has become evident both nationally and globally, that climate change in the form of extreme weather events such as hurricanes, floods, heat waves, droughts, and tornados requires us to protect our communities through

adaptation and preparedness measures. Many municipalities and states within the U.S. have outlined preparedness and/or adaptation plans to address disasters from extreme weather events (see Georgetown Climate Center's [State and Local Adaptation Plans](#)). Georgetown Climate Center offers an [Adaptation Clearinghouse](#) with

policy and adaptation toolkits to assist communities in preparing for extreme weather events.

Another consideration of the increase in the intensity and frequency of natural disasters is the threat to public health from fallout of non-renewable energy sources such as nuclear power. One recent example is the nuclear crisis in the Japan crisis post-tsunami in 2011 (see [Japan's Quake and Tsunami](#) and [USGS Updates Magnitude of Japan's 2011 Tohoku](#)

[Earthquake to 9.0](#)). The promotion of safe, renewable sources of energy such as solar and wind would prevent environmental concerns as natural disasters increase in the number and severity with climate changes. Renewable energy is energy generated from natural resources that are naturally replenished. Nurses must advocate for clean energy policies that support safe, renewable sources of energy such as wind, solar, biomass, geothermal, hydro, tidal, and wave (see [Energy.gov Renewable Energy](#)). A comprehensive [State Energy and Analysis Tool](#) is available that can provide a state-level overview of the energy sector and clean energy options.

For more information about climate preparedness watch the TED Talk: "[Let's prepare for climate change](#)" by Vicki Arroyo.

### ADVOCATING FOR CLEAN AIR & A HEALTHIER CLIMATE

Clean air, with reductions in carbon pollution is essential for a healthier climate and public. The health, environmental, and economic impacts of air pollution are significant. Each day, air pollution causes lost days at work and school, as well as reducing agricultural crop and commercial forest yields by billions of dollars each year.

By reducing air pollution, the Clean Air Act has led to significant improvements in human health and the environment in the United States.

Since 1970,

- ◆ The six commonly found air pollutants have decreased by more than 50 percent,



Nurses advocating for clean air at an EPA hearing on emissions from coal fired power plants.



- ◆ Air toxics from large industrial sources, such as chemical plants, petroleum refineries, and paper mills have been reduced by nearly 70 percent,
- ◆ Production of most ozone-depleting chemicals has ceased.

At the same time,

- ◆ The US gross domestic product, or GDP has tripled,
- ◆ Energy consumption has increased by 50 percent, and
- ◆ Vehicle use has increased by almost 200 percent.

Nurses have been actively advocating for the Clean Air Act and its positive impact on health (and the environment) through letter writing campaigns, op-eds, interviews with the media, and providing testimony to the Environmental Protection Agency and Congress. See an example of testimony about the Clean Air Act at: <http://nursingworld.org/CleanAirAct-Testimony.aspx>.

In 2013, the American Lung Association worked closely with the Alliance of Nurses for Healthy Environments to support the new carbon standards proposed by EPA. Talking points were provided to nurses to present at the EPA Listening Sessions (see Appendix A).

The Alliance of Nurses for Healthy Environments has worked closely with a number of groups to promote the Clean Air Act. It hosts monthly calls with nurses interested in policy/advocacy. Find more information about ANHE go to [www.enviRN.org](http://www.enviRN.org) or on [Facebook](#).

## ADVOCATING FOR THE CLEAN AIR ACT

Effective advocates influence public policy, laws and budgets by using facts, their relationships, the media, and messaging to educate government officials and the public on the changes they want to bring for a healthier environment.

### Tips For Effective Advocacy:

- ◆ Know the facts: To gain and maintain credibility, it is critical that you have the all of the facts on both sides of any issue. Having this information will help you in conversations with government officials, the media, other advocates, and the general public.
- ◆ Use the facts: Any position you take should be grounded in the facts. It is often helpful to put your facts into one-pagers that you can distribute. Many organizations such as the American Lung Association provide talking points or letters that can guide you (See Appendix A).
- ◆ Have clear and concise message: Government officials, the press and the general public do not have time for long-winded conversations or documents—you need to get to your point quickly and concisely. And remember to watch out for the jargon and acronyms used in different fields—you want everyone to understand the issues you are raising.

- ◆ Nurture relationships and work collaboratively: Advocacy is a joint venture- you need to find your allies and work with them. Your chances of success are much greater when there are large numbers of organizations and people on your side. Whenever possible, be sure you and your allies have consistent data and the same messages.

- ◆ Engage the public: Use the media, social media, petitions, letters, e-mails and other grassroots strategies to engage as many New Yorkers as you can. Remember numbers speak loudly to elected officials!

- ◆ Make your voice heard! Advocacy is not the place for being shy. Make sure you spread the word—through meetings with government officials, press conferences, letters, petitions, rallies, and phone calls. And don't forget to talk about what you are advocating for at dinner parties and social events- you never know who can become a useful ally.

Say thank you: Remember that everyone is busy and their time is valuable. Keep your meetings short and always say thank you afterwards. When your advocacy is a success, always thank everyone who helped you achieve your victory!

## CONCLUSION

Nurses are trusted by society worldwide. They must advise and advocate for a cleaner environment that mitigates climate changes through strong clean air and energy policies, and to prepare communities to adapt to extreme weather events resulting from climate changes.

Watch Module 3 and learn about why advocacy is such an essential part of nursing practice: [https://www.youtube.com/watch?v=TpRIM\\_\\_4IhI](https://www.youtube.com/watch?v=TpRIM__4IhI)

# Appendix A

## *Sample documents to support the Clean Air Act*

### TALKING POINTS FOR EPA PUBLIC LISTENING SESSIONS ON REDUCING CARBON POLLUTION FROM EXISTING POWER PLANTS

The U.S. Environmental Protection Agency (EPA) is currently conducting public sessions to hear views on what should be done to limit carbon pollution emitted from power plants, with a focus on existing power plants. You'll have about three minutes to speak to staff at these listening sessions. Here are some important things to convey:

- ◆ The American Lung Association supports EPA's proposal to set standards for power plants that will be built in the future. In September, EPA proposed the first ever national power plant carbon pollution standards. The standards set clear expectations for the next generation of power plants to ensure that they are the cleanest, most efficient, modern power plants.
- ◆ EPA must set similar standards for carbon pollution from EXISTING power plants. There are standards for toxics, acid gases, heavy metals, and smog-forming and soot-forming emissions from power plants and there should be standards for carbon pollution as well. Existing power plants create 38 percent of the carbon pollution in the United States, making them the largest single source of carbon. They also create 32 percent of the total greenhouse gases produced in this nation.
- ◆ EPA must protect our kids and communities from power plant pollution. Scientists warn that the buildup of carbon pollution will create warmer temperatures, which may, in turn, increase the risk of unhealthy smog levels. Currently, millions of children have asthma attacks every year, and ozone smog pollution is a well-known trigger. Any increases in smog will mean more childhood asthma attacks and complications for those with lung disease. Additionally, children are more susceptible to the health effects of air pollution because their lungs are still developing, and they often spend more time outdoors than adults.
- ◆ Carbon pollution standards for existing power plants will further reduce other types of pollution from plants. Researchers (West et al., Nature Climate Change, 2013; 3:885-889) found that efforts enacted now to reduce greenhouse gases (e.g. carbon dioxide) from all sources in the U.S. would prevent more than 16,000 premature deaths by 2030. The lives saved are a result of reductions in smog- and soot-forming pollution that would occur as carbon is reduced, because actions to clean up carbon would have the additional benefit of cleaning up other pollutants, too.
- ◆ There are currently no national limits on the amount of carbon pollution allowed from power plants. The Clean Air Act is one of the nation's most important public health laws, with a long history of success. With overwhelming bipartisan support, Congress granted EPA the authority to reduce air pollution to protect public health decades ago. The Supreme Court has affirmed multiple times that this authority extends to carbon pollution. However, there are no national limits on the amount of carbon pollution allowed from power plants. EPA needs to propose strong limits on carbon pollution from existing power plants to fulfill the mission of the Clean Air Act – protecting the public from air pollution that endangers health.
- ◆ Americans support strong limits on pollution from power plants. According to a bipartisan survey conducted for the American Lung Association, voters strongly support EPA's efforts to update clean air protections. An astounding 72 percent of voters surveyed specifically want EPA to set limits on power plant carbon pollution.
- ◆ People don't buy into industry's "false choice" that we must choose between public health and a strong economy. According to the same poll conducted for the American Lung Association, nearly three quarters (73 percent) of voters say that we do not have to choose between air quality and a strong economy – we can achieve both. And a 2-to-1 majority (60 to 31 percent) believes that strengthening safeguards against pollution will create, not destroy, jobs by encouraging innovation.

# Appendix A cont.

## *Sample documents to support the Clean Air Act*

- ◆ Your personal story. Whether you're a health professional who sees the impact of ozone on your patients or a person whose health suffers on dirty air days, be sure to include your personal reasons for wanting EPA to clean up carbon pollution.

### **SAMPLE LETTER: PUBLIC HEALTH AND MEDICAL PROFESSIONALS WHO SUPPORT CLEAN & HEALTHY AIR**

*Letter for Concerned Public Health and Medical Professionals to be sent to Elected Officials in Washington*

Dear President/Senator/Representative,

As health and medical professionals, we are keenly aware of the health impacts of air pollution. Air pollution is linked to a wide range of health consequences including cancer, asthma attacks, heart attacks and strokes. The Clean Air Act guarantees all Americans, especially the most vulnerable, air that is safe and healthy to breathe. Despite tremendous air pollution reductions, more progress is needed to fulfill this promise. Please support the full implementation and enforcement of the Clean Air Act.

Throughout its four decade history protecting the public from air pollution, the Clean Air Act has enjoyed strong bipartisan support. The original Clean Air Act and its subsequent amendments received overwhelming votes in Congress. This landmark public health law directed the Environmental Protection Agency to protect health and the environment from air pollution. The result is saved lives and improved quality of life for millions of Americans. But the job is not finished. Communities across the nation still suffer from poor air quality. Low-income families face the impacts of toxic air pollution every day. From smog causing asthma attacks to toxic mercury harming children's neurological development, far too many people face a constant threat from the air they breathe and the impacts of climate change.

Please fulfill the promise of clean, healthy air for all Americans to breathe. Support full implementation of the Clean Air Act and resist any efforts to weaken, delay or block progress toward a healthier future for all Americans.

Sincerely,

Your name, RN

*You can sign onto this letter [here](#).*





# Appendix B

## Climate Change Resources

### INTERVIEWS

Dr. George Lakoff- climate change- NPR interview- talks about framing with linguistics

<http://www.npr.org/templates/story/story.php?storyId=123950399>

Smog Deaths in 1948 led to Clean Air Laws-NPR Interview:

<http://www.npr.org/templates/story/story.php?storyId=103359330>

### WEBINARS/VIDEOS

350 dot org: <http://350.org/resources/videos/actions/>

American Public Health Association: <http://www.apha.org/advocacy/reports/webinars/climatewebinars.htm>

Climate Adaptation Mitigation and E-Learning (CAMEL) : [www.camelclimatechange.org](http://www.camelclimatechange.org)

Climate change and health webinar sponsored by Health Care Without Harm and the Alliance of Nurses for Healthy Environments: [http://www.instantpresenter.com/WebConference/RecordingDefault.aspx?c\\_psrId=E959DE82804D](http://www.instantpresenter.com/WebConference/RecordingDefault.aspx?c_psrId=E959DE82804D)

Climate Reality Project: [www.climateRealityProject.org](http://www.climateRealityProject.org)

National Climate Assessment Webinars: [www.securityandsustainabilityforum.org](http://www.securityandsustainabilityforum.org)

### WEBSITES

Addressing climate change in the health care setting: [http://www.noharm.org/lib/downloads/climate/Addressing\\_Climate\\_Change.pdf](http://www.noharm.org/lib/downloads/climate/Addressing_Climate_Change.pdf)

American Lung Association <http://www.lung.org/healthy-air/>

American Public Health Association <http://www.apha.org/advocacy/policy/policysearch/default.htm?id=1351>

Anesthetic gases and carbon footprint: <http://www.sciencedaily.com/releases/2010/12/101203081644.htm>

Population Connection: <http://www.populationconnection.org/site/PageServer>

Climate 911-- Dr.Wendy Ring's U.S. Bike Tour: [www.climate911.org](http://www.climate911.org)

Climate Change Action Info: [www.climatechangeaction.info](http://www.climatechangeaction.info)

Climate communication: <http://www.climatecommunication.org/affects/human-health/>

Environmental Protection Agency's Carbon Footprint Calculator <http://www.epa.gov/climatechange/ghgemissions/ind-calculator.html>

EnviRN - The Alliance of Nurses for Healthy Environments (ANHE): [www.envirn.org](http://www.envirn.org)

Green Guide for Healthcare: <http://medusa.nocdirect.com/~gghcorg/documents/Version2.2/GGHC-v2-2-Ops-08Rev.pdf>

Health Care Without Harm: [www.noharm.org](http://www.noharm.org)

Intergovernmental Panel on Climate Change: [www.ipcc.ch/](http://www.ipcc.ch/)

Natural Resources Defense Council <http://www.nrdc.org/health/climate/>

Physicians for Social Responsibility: [www.psr.org](http://www.psr.org)

Practice Green health: [www.practicegreenhealth.org](http://www.practicegreenhealth.org)

League of Conservation Voters- <http://scorecard.lcv.org/roll-call-vote/2011-738-gutting-public-health-basis-clean-air-act>

Reducing Carbon Emissions: State and Company Successes: [http://www.georgetownclimate.org/sites/default/files/Reducing\\_Carbon\\_Emissions\\_in\\_the\\_Power\\_Sector-Success-Stories.pdf](http://www.georgetownclimate.org/sites/default/files/Reducing_Carbon_Emissions_in_the_Power_Sector-Success-Stories.pdf)

US Climate Action Network (USCAN) - <http://www.usclimatenetwork.org/policy/the-clean-air-act>

US CAN Member Action Centers - <http://www.usclimatenetwork.org/climate-change-101/take-action>

US CAN Climate Risks and Preparedness - [http://www.usclimatenetwork.org/climate-change-101/Climate-Risks-and-Preparedness/atct\\_topic\\_view\\_no\\_thumbs?b\\_start:int=0&C=](http://www.usclimatenetwork.org/climate-change-101/Climate-Risks-and-Preparedness/atct_topic_view_no_thumbs?b_start:int=0&C=)

USA Today: Weathering Change –information about allergies and climate change

<http://www.usatoday.com/story/news/nation/2013/05/30/climate-change-allergies-asthma/2163893/>

# Appendix B cont.

## Climate Change Resources

### CLIMATE RESILIENT HEALTHCARE

Health Care Facility Climate Change Resiliency Toolkit

<http://www.greenhealthcare.ca/climateresilienthealthcare/toolkit/>

Hospital Evacuation Checklist

<http://www.calhospitalprepare.org/post/hospital-evacuation-checklist>

Health Care Facility Climate Change Resiliency Toolkit

<http://www.greenhealthcare.ca/climateresilienthealthcare/toolkit/>

Hospital disaster preparedness

<http://www.ashe.org/advocacy/organizations/TJC/ec/emergency/hospdisasterprepare.html>

Hurricane response plan

<http://www.jacksonhealth.org/library/plans/hurricane-response-plan-12.pdf>

Hurricane preparedness checklist

[http://www.lenoxhillhospital.org/uploadedFiles/Content/Serving\\_Our\\_Community/Hurricanebrochure.pdf](http://www.lenoxhillhospital.org/uploadedFiles/Content/Serving_Our_Community/Hurricanebrochure.pdf)

Tools and Resources to Help Communities Prepare for Hurricane Season

<http://archive.ahrq.gov/prep/hurricane.htm>

Sandy Exposed Hospitals' Lack of Disaster Preparedness

<http://www.insurancejournal.com/news/national/2012/11/06/269512.htm?print>

Hospital Readiness for Hurricane Sandy

<http://www.nlm.nih.gov/medlineplus/podcast/transcript010713.html>

Hospital Experts Talk About Prepping for Disasters

<http://health.usnews.com/health-news/hospital-of-tomorrow/articles/2013/12/06/bracing-for-the-worst-hospitals-and-emergency-preparedness>

Hospitals in Hurricane Katrina

[http://www.urban.org/UploadedPDF/411348\\_katrinahospitals.pdf](http://www.urban.org/UploadedPDF/411348_katrinahospitals.pdf)

Hospital Preparedness for Emergency Response: United States, 2008

<http://www.cdc.gov/nchs/data/nhsr/nhsr037.pdf>

Hurricane Information for Health Care Professionals

<http://www.bt.cdc.gov/disasters/hurricanes/hcp.asp>

Hurricanes

<http://emergency.cdc.gov/disasters/hurricanes/index.asp>

Emergency Operations Plan

[http://www.utmb.edu/emergency\\_plan/](http://www.utmb.edu/emergency_plan/)

Lessons Learned From Hurricane Sandy: 6 Steps Every Hospital Should Implement Before Disaster Strikes

<http://www.beckershospitalreview.com/quality/lessons-learned-from-hurricane-sandy-6-steps-every-hospital-should-implement-before-disaster-strikes.html>

# Appendix C

## Bibliography

Aguirre, B, R Dynes, J. Kendra and R. Connell (2005). Institutional Resilience and Disaster Planning for New Hazards: insights from Hospitals. *Journal of Homeland Security and Emergency Management*, Vol 2, Issue 2, 2005.

American Academy of Pediatrics (AAP). (November 2007). "Policy Statement: Global Climate Change and Children's Health." *Pediatrics*, 120(5), 1149-1152. (doi:10.1542/peds.2007-2645). Retrieved on June 8, 2011 from <http://aappolicy.aappublications.org/cgi/content/full/pediatrics;120/5/1149>.

American Nurses Association. (2008). House of Delegates Resolution, Global Climate Change. Retrieved on June 8, 2011 from <http://www.nursingworld.org/MainMenuCategories/OccupationalandEnvironmental/environmentalhealth/PolicyIssues/GlobalClimateChangeandHumanHealth.aspx>.

American Medical Association House of Delegates. (May, 2008). Climate and Health, Resolution: 430 (A-08). Retrieved June 8, 2011 from <http://www.unf.edu/brooks/center/pdfs/AMA%20Resolution%20430.pdf>.

Babin S, Burkom H, Holtry R, Taberner N, Stokes L, Davies-Cole J, DeHaan K, Lee D, (2007). "Pediatric Patient Asthma-Related Emergency Department Visits and Admissions in Washington, DC, from 2001-2004, and Associations with Air Quality, Socio-Economic Status, and Age Group." *Environmental Health*, 6(9), doi:10.1186/1476-069X-6-9.

Bates, B.C., Kundzewicz, Z.W., Wu, S, Palutikof, J.P., eds. (2008). *Climate Change and Water*. Geneva, Switzerland: Intergovernmental Panel on Climate Change Secretariat.

Battisti, D.S., Naylor, R.L. (2009). "Historical Warnings of Future Food Insecurity with Unprecedented Seasonal Heat." *Science*, 323 (5911) 240-44. doi:10.1126/science.1164363.

Balbus, J. M. & Malina, C. (2009). "Identifying Vulnerable Subpopulations for Climate Change Health Effects in the United States." *Journal of Occupational and Environmental Medicine*, 51(1), 33-37.

Basu, R., Malig, B., & Ostro, B. (2010). "High Ambient Temperature and the Risk of Preterm Delivery." *American Journal of Epidemiology*, 172(10), 1108-17, doi: 10.1093/aje/kwq170.

Bell, J., Sloan, L.C., Snyder, M.A. (2004). "Regional Changes in Extreme Climactic Events: A Future Climate Scenario." *Journal of Climate*, 17(1), 81-87.

Bell, M., Davis, D. L., Cifuentes, L., Krupnick, A.J., Morgenstern, R.D., and Thurston, G.D. (2008). "Ancillary Human Health Benefits of Improved Air Quality Resulting from Climate Change Mitigation." *Environmental Health*, 7 (41), doi: 10.1186/1476-069X-7-41.

Berry, H.L., Bowen, K. & Kjellstrom, T. (2010). "Climate Change and Mental Health: A Causal Pathways Framework." *International Journal of Public Health*, 55(2), 23-132. Doi: 10.1007/s00038-009-0112-0.



# Appendix C cont.

## Bibliography

- Black, R.E., Allen, L. H., Bhutta, Z.A., Caulfield, L.E., deOnis, M., Ezzati, M., Mathers, C. & Rivera, J. (2008). "Maternal and Child Undernutrition: Global and Regional Exposures and Health Consequences." *Lancet*, 371, 243–260. doi:10.1016/S0140-6736(07)61690-0.
- Brilliant, I. (2007). *Climate, poverty and health: Seventh Annual John H. Chaffee Memorial Lecture on Science and the Environment*. National Council for Science and the Environment. Washington, DC.
- Burke, M. & Lobell, D. (2010). "Climate Effects on Food Security: An Overview." *Climate Change and Food Security Advances in Global Change Research*, 37(1), 13-30, doi: 10.1007/978-90-481-2953-9\_2.
- Catholic Health Association (CHA). (2009). *Faithfully Healing the Earth: Climate Change and Catholic Health Care*, available at: [http://www.chausa.org/Climate\\_Change/](http://www.chausa.org/Climate_Change/).
- Catholic Health Association of the United States [CHA] (2013). Special Section: Disaster Readiness. *Health Progress*: November-December 2013. <http://www.chausa.org/publications/health-progress>.
- Chan, M. (September 2007). Address to the Regional Committee for the Western Pacific. World Health Organization. Retrieved June 8, 2011 from [http://www.who.int/dg/speeches/2007/20070910\\_korea/en/](http://www.who.int/dg/speeches/2007/20070910_korea/en/).
- Costello, A. Abbas, M., Allen, A., Bell, S., Bellamy, R., Friel, S., Groce, N., Johnson, A., Kett, M. Lee, M., Levy, C., Maslin, M., McCoy, D., McGuire, B., Montgomery, H., Napier, D., Pagel, C., Patel, J., deOlivera, J., Redclift, N., Rees, H., Rogger, D., Scott, J., Stephenson, J., Twigg, J., Wolff, J. & Patterson, C. (2009). "Lancet and the University College London Institute for Global Health Commission: Managing the Health Effects of Climate Change." *The Lancet*, 373, (9676), 1693-1733.
- Costello, A., Maslin, M., Montgomery, H., Johnson, A.M., & Ekins, P. (2011). Global health and climate change: moving from denial and catastrophic fatalism to positive action, *Philosophical Transactions of the Royal Society of London, Series A, Mathematical and Physical Sciences*, 369(1942), 1866-82.
- D'Amato, G., Cecchi, L., D'Amato, M., Liccardi, G. (2010). "Urban Air Pollution and Climate Change as Environmental Risk Factors of Respiratory Allergy: An Update." *Journal of Investigational Allergology Clinical Immunology*, 20(2): 95-102.
- Delpla, I., Jung, A.V., Baures, E., Clement, M., Thomas, O. (2009). "Impacts of Climate Change on Surface Water Quality in Relation to Drinking Water Production." *Environment International*, 35, 1225–1233.
- Denman, K.L., Brasseur, G., Chidthaisong, A., Ciais, P., Cox, P., Dickinson, R.E., Hauglustaine, D., Heinze, Holland, E., Jacob, D., Lohmann, U., Ramachandran, S., Leite da Silva Dias, P., Wofsy, S.C., Zhang, X., (2007). "Couplings Between Changes in the Climate System and Biogeochemistry." In: *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.
- Department of Energy. (2008) *Energy Smart Hospitals: Creating Energy Efficient, High Performance Hospitals*. Retrieved June 20, 2011, from [http://apps1.eere.energy.gov/buildings/publications/pdfs/energysmarthospitals/esh\\_factsheet.pdf](http://apps1.eere.energy.gov/buildings/publications/pdfs/energysmarthospitals/esh_factsheet.pdf).
- Ebbers, J. (2011). *Energy Efficiency in Healthcare*. Energy Efficiency Pre-Conference Workshop presented by Practice Green Health. Retrieved June 23, 2011 from <http://www.accoonline.org/ccls/healthyhospitals2011/ACCO-CCLS-June2011-Slides-P-Ebers.pdf>.

# Appendix C cont.

## Bibliography

- Ebi, K.L., & McGregor, G. (2008). "Climate Change, Tropospheric Ozone and Particulate Matter, and Health Impacts." *Environmental Health Perspectives*, 116(11), 1449-1455.
- Ebi, K.L., Mills, D.M., Smith, J.B., Grambusch, A. (2006) "Climate Change and Human Health Impacts in the United States: An Update on the Results of the U.S. National Assessments." *Environmental Health Perspectives*, 114(9), 1318-1324.
- Ebi, K.L. & Paulson, J. (2007). "Climate Change and Children." *Pediatric Clinics of North America*, 54(2) pp. 213-226.
- Ebi, K.L., Sussman F.G., & Wilbanks, T.J. (2008). "Analyses of the Effects of Global Change on Human Health and Welfare and Human Systems", A Report by the U.S. Climate Change Science Program and the Subcommittee on Global Change Research. [Gamble, J.L. (ed.),]. U.S. EPA. Available: <http://www.climatechange.gov/Library/sap/sap4-6/final-report/sap4-6-final-all.pdf>
- Environmental Protection Agency (EPA) (2011). Heat Island Impacts. Retrieved on May 21, 2011 from <http://www.epa.gov/heatisld/impacts/index.htm>.
- Environmental Protection Agency (EPA), Office of Air and Radiation. (March 2011). The Costs and Benefits of the Clean Air Act: Summary Report. <http://www.epa.gov/air/sect812/feb11/summaryreport.pdf>.
- Fankhauser, S., Smith, J.B., & Tol, R.S.J. (1997). "Weathering Climate Change: Some Simple Rules to Guide Adaptation Decisions." *Ecological Economics*, 30 (1999) 67–78.
- Fankhauser, S. & Tol, R.S.J.(1997). "The Social Costs of Climate Change: The IPCC Second Assessment Report and Beyond." *Mitigation and Adaptation Strategies for Global Change*, 1, 385.
- Federal Emergency Management Agency [FEMA] (2011). Design Guide for Improving Hospital Safety in Earthquakes, Floods, and High Winds: Providing Protection to People and Buildings. <http://www.fema.gov/media-library/assets/documents/10672?id=2739>
- Gill, M. & Stott, R. (2009). "Health Professionals Must Act to Tackle Climate Change." *The Lancet*, 374(9706), 1953-1955. doi:10.1016/S0140-6736(09)61830-4.
- Gould, R. (April 12, 2011). Climate Change and the Role of Health Care Professionals: Education, Mitigation, and Advocacy. Earth Day Webinar hosted by Practice Greenhealth. Accessed June 23, 2011 from <http://www.practicegreenhealth.org/private/material/3582>.
- Guerra, C.A., Snow, R.W., & Hay, S.I., (2006). "Mapping the Global Extent of Malaria in 2005." *Trends in Parasitology*, 22, (8), 353-358.
- Haines A, & Patz JA (2004). "Health Effects of Climate Change." *Journal of the American Medical Association*, 291(1), 99–103. doi: 10.1001/jama.291.1.99
- Health Care Without Harm (HCWH) (n.d.) The Food and Climate Connection in Health Care Food Service. Retrieved June 8, 2011 from [http://www.noharm.org/lib/downloads/food/Food\\_Climate\\_Change.pdf](http://www.noharm.org/lib/downloads/food/Food_Climate_Change.pdf).
- Health Care without Harm (HCWH) (n.d.). Climate and Health Literacy Consortium. Retrieved June 8, 2011 from [http://www.noharm.org/us\\_canada/issues/climate/chlc/](http://www.noharm.org/us_canada/issues/climate/chlc/).

# Appendix C cont.

## Bibliography

- Hogan, W. W. and D. W. Jorgenson (1991). "Productivity Trends and the Costs of Reducing Carbon Dioxide Emissions." *Energy Journal*, 12(1), 67-85.
- Hyer, K et al. (2006). "Establishing and Refining Hurricane Response Systems for Long-Term Care Facilities," *Health Affairs* 25, no. 5: w407-w411.
- Johnson, L (March 1, 2011). Gains from Clean Air Act: Bull Market Without the Bust [http://switchboard.nrdc.org/blogs/ljohnson/gains\\_from\\_clean\\_air\\_act\\_a\\_bul.html](http://switchboard.nrdc.org/blogs/ljohnson/gains_from_clean_air_act_a_bul.html).
- Jorgensen, D., Goettle, R.J, Hurd, B.H, Smith, J.B. & Mills, D.M. (April 2004). Economics and US Market Consequences of Global Climate Change, PEW Center on Global Climate Change 2101 Wilson Boulevard Suite 550 Arlington, VA 22201, [www.pewclimate.org](http://www.pewclimate.org).
- Knowlton, K. (2008). Preparing for Global Warming: A Framework for Protecting Community Health and the Environment in a Warmer World. Retrieved June 8, 2011 from <http://www.nrdc.org/globalwarming/preparedness.pdf>.
- Koch, Wendy. "Climate Change Linked to More Pollen, Asthma." *USA Today*. Gannett, 31 May 2013. Web. 09 Dec. 2013. <http://www.usatoday.com/story/news/nation/2013/05/30/climate-change-allergies-asthma/2163893/>.
- Kovats, R.S. and S. Hajat, (2008). "Heat Stress and Public Health: A Critical Review." *Annual Review of Public Health*, 41-55.
- Lobel, D., B. & Asner, G. P. (2003). "Climate and Management Contributions to Recent trends in U.S. agricultural yields." *Science*, 299(5609), 1032. doi: 10.1126/science.1078475.
- McMichael A.J., Neira M., Heymann D.L. (2008a). "World Health Assembly 2008: Climate Change and Health." *Lancet*, 371, 1895-96.
- McMichael, A.J., Friel, S., Nyong, A., Corvalan, C. (2008b) "Global Environmental Change and Health: Impacts, Inequalities, and the Health Sector, *BMJ*, 336 (191). doi: 10.1136/bmj.39392.473727.
- Meehl, G.A., Stocker, T. F., Collins, W. D., Friedlingstein, A. T., Gaye, A. T., Gregory, J. M., Kitoh, A., Knutti, R., Murphy, J. M., Noda, A., Raper, S. C. B., Watterson, I. G., Weaver, A. J. and Zhao, Z. (2007) Global Climate Projections. In: Solomon, S., Qin, D., Manning, M., Marquis, M., Averyt, K., Tignor, M. M. B., Miller, H. J. and Chen, Z. (eds.) *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press, 747-845.
- Metz, B., Davidson, O.R., Bosch, P.R., Dave, R., & Meyer, L.A. (eds). (2007). *Climate Change 2007; Mitigation of Climate Change. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge, UK: Cambridge University Press.
- Muller, C., Cramer, W., Hare, W., & Lotze-Campen, H. (2011). "Climate Change Risks for African Agriculture." *Proceedings of the National Academy of Sciences of the United States of America*, 108(11), 4313-4315.
- Paaijmans, K, Blanford, S., Bell, A.S., Blandford, J., Read, A. F., & Thomas, M.B. (2010). "Influence of Climate on Malaria Transmission Depends on Daily Temperature Variation." *Proceedings of the National Academy of Sciences of the United States of America*, 107(34), 15135-15139.

# Appendix C cont.

## Bibliography

- Pacific Institute. (2008). Bottled Water and Energy Fact Sheet. Retrieved June 8, 2011. from [http://www.pacinst.org/topics/water\\_and\\_sustainability/bottled\\_water/bottled\\_water\\_and\\_energy.html](http://www.pacinst.org/topics/water_and_sustainability/bottled_water/bottled_water_and_energy.html).
- Page, L.A. & Howard, L.M. (2010). "The Impact of Climate Change on Mental Health (But Will Mental Health be Discussed at Copenhagen?)" *Psychological Medicine*, 40, 177–180. doi:10.1017/S0033291709992169.
- Parry, M.L., Canziani, O.F., Palutikof, J.P., van der Linden, P.J., Hanson, C.E., eds. (2007). *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge UK: Cambridge University Press.
- Patz, J.A., Campbell-Lendrum, Holoway, T. & Foley, J.A. (2005). "Impact of Regional Climate Change on Human Health." *Nature*, 438(7066), 310-317. doi:10.1038/nature04188.
- Perera, E.M. & Sanford, T. (2011). *Climate Change and Your Health: Rising Temperatures and Worsening Ozone Pollution*, The Union of Concerned Scientists, available at: [http://www.ucsusa.org/assets/documents/global\\_warming/climate-change-and-ozone-pollution.pdf](http://www.ucsusa.org/assets/documents/global_warming/climate-change-and-ozone-pollution.pdf).
- Physicians for Social Responsibility (PSR) (nd). *Health Implications of Global Warming: Impacts on Vulnerable Populations*. Washington, DC: Author. Retrieved May 1, 2011 from: <http://www.psr.org/assets/pdfs/vulnerable-populations.pdf>
- Portier, C.J. & Tart, K.T. (eds) (2010). *The Interagency Working Group on Climate Change and Health (IWGCCCH) A human health perspective on climate change: Report outlining the research needs on the human health effects of climate change*. Research Triangle Park, NC, Environmental Health Perspectives and National Institute of Environmental Health Sciences.
- Radim J. Š rám, Blanka Binková, I Jan Dejmek, I and Martin Bobak, M., (2005). "Ambient Air Pollution and Pregnancy Outcomes: A Review of the Literature", *Environmental Health Perspectives*, 113:375–382. doi:10.1289/ehp.6362 available via <http://dx.doi.org/>.
- Rudowitz, R., D. Rowland and A. Shartzler (2006). *Health Care In New Orleans Before And After Hurricane Katrina*. Health Affairs, August, 2006. <http://content.healthaffairs.org/content/25/5/w393.full>
- Schwartz, BS, Parker C, Glass TA, Hu H. (2006). "Global Environmental Change: What Can Health Care Providers and the Environmental Health Community Do About It Now?" *Environmental Health Perspectives*, 114(12). doi:10.1289/ehp.9313.
- Sheffield, P. E. & Landrigan, P. J. (2011). "Global Climate Change and Children's Health: Threats and Strategies for Prevention." *Environmental Health Perspectives*, 119(3), 291–298. doi:10.1289/ehp.1002233
- Somerville, Richard, Jeff Masters, Jerry Meehl, and Kevin Trenberth. "Overview - Current Extreme Weather & Climate Change." *Climate Communication*. Climate Communication - Science & Outreach, 2013. Web. 08 Dec. 2013. <http://www.climatecommunication.org/new/articles/extreme-weather/overview/>.
- St. Louis, M & Hess, J. (2008). "Climate Change: Impacts on and Implications for Global Health." *American Journal of Preventive Medicine*, 35(5), 3527-538, 2008.
- Taylor, I. L. MD, PhD (2007). *Hurricane Katrina's Impact on Tulane's Teaching Hospitals*. *Trans Am Clin Climatol Assoc*. 2007; 118: 69–78. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1863583/>



# Appendix C cont.

## Bibliography

- Tol, R. S. J., (1995). "The Damage Costs of Climate Change: Toward More Comprehensive Calculations." *Environmental and Resource Economics*, 5, 353-354.
- Tol, R. S. J., (1996). "The Damage Costs of Climate Change: Towards a Dynamic Representation." *Ecological Economics*, 19, 67-90.
- Tol, R.S.J. (2002a). "New Estimates of the Damage Costs of Climate Change, Part I: Benchmark Estimates." *Environmental and Resource Economics*, 21(1), 47-73.
- Tol, R.S.J. (2002b). "New Estimates of the Damage Costs of Climate Change, Part II: Dynamic Estimates." *Environmental and Resource Economics*, 21(1), 135-160.
- Torjman, S. (September, 2005). What is Policy? Caledon Institute of Social Policy. Retrieved June 8, 2011 from <http://www.csgv.ca/counselor/assets/PublicPolicy.pdf>.
- Trasande, L. & Liu, Y. (2011). "Reducing the Staggering Costs Of Environmental Disease In Children, Estimated At \$76.6 Billion In 2008." *Health Affairs*, 30(5), 871-8.
- US Department of Energy [US DOE] (2013). Guide to Using Combined Heat and Power for Enhancing Reliability and Resiliency in Buildings. September, 2013. Prepared by Anne Hampson and Jessica Rackley, ICF International, under contract to the U.S. Environmental Protection Agency and the U.S. Department of Energy. [http://www1.eere.energy.gov/manufacturing/distributedenergy/pdfs/chp\\_for\\_reliability\\_guidance.pdf](http://www1.eere.energy.gov/manufacturing/distributedenergy/pdfs/chp_for_reliability_guidance.pdf)
- US Department of Health and Human Services [US HHS ASPR] (2011). From Hospitals to Healthcare Coalitions: Transforming Health Preparedness and Response in Our Communities. Assistant Secretary for Preparedness and Response Report on the Hospital Preparedness Program. <http://www.phe.gov/Preparedness/planning/hpp/Documents/hpp-healthcare-coalitions.pdf>
- US Housing and Urban Development [US HUD] (2013). Hurricane Sandy Rebuilding Strategy: Stronger Communities, A Resilient Region. Hurricane Sandy Rebuilding Task Force. <http://portal.hud.gov/hudportal/HUD?src=/sandyrebuilding>
- Valentine, K. (2013). The Extraordinary Steps Health Care Providers are Taking to Prepare for Climate Change. *Climate Progress*, July 30, 2013. <http://thinkprogress.org/climate/2013/07/30/2307431/the-extraordinary-steps-health-care-providers-are-taking-to-prepare-for-climate-change/>
- Viscusi, W.K. & Aldy, J.E. (2003). "The Value of a Statistical Life: A Critical Review of Market Estimates throughout the World." *Journal of Risk and Uncertainty*, 27(1), 5 – 76.
- Wiley, L. & Gostin, L.O. (2009). "The International Response to Climate Change: An Agenda for Global Health." *Journal of the American Medical Association*, 302, (11), 1218-1220.
- World Health Organization (WHO) (2009). *Protecting Health from Climate Change: Connecting Science, Policy and People*. Geneva: Author.